

Appendix C

Appendix C shows a comparison of the amino acid sequences of the SDH domains of the bifunctional LKR/SDH proteins from Arabidopsis, corn and soybean, SEQ ID NOs: 112, 122 and 121, respectively, and the yeast monofunctional glutamate-forming SDH (gi:729968). Amino acids conserved among at least one plant sequence and the yeast sequence are indicated with an asterisk (*) on the top row; amino acids conserved among at least two plant sequences are indicated by a plus (+) above the alignment; dashes are used by the program to maximize the alignment of the sequences.

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      *   *****   *   *   *   *   *   *   *   *   *   *   *   *   *
      ++  ++++++ ++++++ ++++++ ++++++ ++++++ ++++++ ++++++
SDH domain of SEQ ID NO:112 MTKKSGVLILGAGRVCRPAADFLASVRTISSQWYKTYFGADSEKTDVHVIVASLYLKD
SDH domain of SEQ ID NO:122 GPK---ILILGAGRVCRPAAEFLASYPDICT-----YGVDDHDADQIHVIVASLYQKD
SDH domain of SEQ ID NO:121 ---KAAVLILGAGRVCPAAEMLSSFGRPSSSQWYKTYLLEDDFECQTDVEIVIGSLYLKD
GI: 729968 MGKN--VLLGSGFVAQFVIDTLAA-----NDDINVTVACRTLAN

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      ++++++ ++++++ ++++++ ++++++ ++++++ ++++++ ++++++ ++++++
SDH domain of SEQ ID NO:112 AKETVEGISDVEAVRLDVSDSESLKYVSQVDVVLSPASCHAVVAKTCIELKKHLVTA
SDH domain of SEQ ID NO:122 AEETVDGIENTTATQLDVADIGSLSDLVSQVEVVISLLPASFHAAIAGVCIELKKHMVTA
SDH domain of SEQ ID NO:121 AEQTVEGIPNVTGIQLDVMDRANLCKYISQVDVVISLLPPSCHIIIVANACIELKKHLVTA
GI: 729968 A-QALAKPSGSKAISLDVTDSDALDKVLADNDVVISLIPYTFHPNVVKSIAIRTKTDVVTST

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      **   *   *   *   *   *   *   *   *   *   *   *   *   *   *   *
      ++++++ ++++++ ++++++ ++++++ ++++++ ++++++ ++++++ ++++++
SDH domain of SEQ ID NO:112 SYVDETSMLHEKAKSAGITILGEMGLDPGIDHMMAMKMINDAHKKGKVKSFYSYCGGL
SDH domain of SEQ ID NO:122 SYVDESMNLSQLAAKDAGVTILCEMGLDPGIDHLSMKMIDEAHARKGKIKAFYSYCGGL
SDH domain of SEQ ID NO:121 SYVDSMSMLNDKAKDAGITILGEMGLDPGIGHMMAMKMINQAHVRKGKIKSFYSYCGGL
GI: 729968 SYISPALRELEPEIVKAGITVMNEIGLDPGIDHLYAVKTIDEVHRAGGKLSFYSYCGGL

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      ++++++ ++++++ ++++++ ++++++ ++++++ ++++++ ++++++ ++++++
SDH domain of SEQ ID NO:112 PSPAAANNPLAYKFSWNPAGAIRAGQNPARYKNSGDIHVHGKLNLYDSAAFRVFNLPAP
SDH domain of SEQ ID NO:122 PSPAAANNPLAYKFSWNPAGALRSGKNPAVYKFLGETIHVHGKLNLYESAKRLRLRELPAF
SDH domain of SEQ ID NO:121 PSPEAANNPLAYKFSWNPAGAIRAGRNPATYKGGETVHIDGDDLVDYDSTRRLRLPDLPAF
GI: 729968 PAPEDSDNPLGYKFSWSSRGVLLALRNSAKYWKDGKIETVSSEDLMATAKPYFI--YPGY

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+++++ +++++ +++++ +++++ +++++ +++++ +++++ +++++ +
SDH domain of SEQ ID NO:112 ALECFPNRDSLIVGEHYGIESEATTIFRGTLRYEGFSMIMATLSKLGFFDSEANQVLSTG
SDH domain of SEQ ID NO:122 ALEHLPNRNSLIYGDLYGISKEASTIYRATXRYEGFSEIMVTLSTKGTFFDAANHPLLQDT
SDH domain of SEQ ID NO:121 ALECLPNRNSLLYGDLYGI-TEASTIFRGTLRYEGFSEIMGTLSRISLFPNNEAHSLLMNG
GI: 729968 AFVCPNDRSTLFDKLYHIP-EAETVIRGTLRYQGPFPEVKALVDMGLKDDANEIF--S

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+++++ ++ +++++ + +++++ + ++ +++++ + + +++++ +
SDH domain of SEQ ID NO:112 KRITFGALLSNIINKDADNESEPLAG----EEEISKRIIKLGHKSKE--TAAKAAKTIVF
SDH domain of SEQ ID NO:122 SRPTYKGFLDELLNNISTINTDLIEASGGYDDDLIARLLKLGCKCKNKEIAVKTIVKIKF
SDH domain of SEQ ID NO:121 QRPTFKKFLFELLKVVGDNPDELLIG-----ENDIMEQILIQGHCKDQRTAMETAktiIF
GI: 729968 KPIAWNEALKQYL-----GAKSTSKEDLIASIDSKATWKDDEDRERILSGFAW

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SDH domain of SEQ ID NO:112 LGFNEEREVPSLCKSVFDATCYLMEEKLAYSGNEQDMVLLHHEVEVEFLESKRIEKHTAT
SDH domain of SEQ ID NO:122 LGLHEETQIPKGCSSPPFDVICQRMEOQRMAYGHNEQDMVLLHHEVEVEYPDGQPAEKHQAT
SDH domain of SEQ ID NO:121 LGLLDQTEIPASCKSAFDVACFRMEERLSYTSKEDMVLHHEVEIEYPSDQITEKHRAT
GI: 729968 LGLFSDAKITPR-GNALDTLCARLEELMQYEDNERDMVVLQHKFGIEWADGT-TETRTST

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+++++ + +++++ +++++ +++++ +++++ +++++ +++++ +++++
SDH domain of SEQ ID NO:112 LLEFGDIKNQOTTAMAKTVGIPAAIGALVLIEDKIKTRGVLRPLEAEVYLPAL-DILQA
SDH domain of SEQ ID NO:122 LLEFGKVNGRSTTAMALTVGIPAAIGALLLKNKVQTKGVIRPLQPEIYVPAL-EILES
SDH domain of SEQ ID NO:121 LLEFGKTLDEKTTTAMALTVGIPAAVGALLLTNKNIQTRGVLRPIEPEVYNPAL-DIEA
GI: 729968 LVVYGVKG---GYSSMAATVGYPVAIA TKFVLDGTIKGPGLLAPYSPEINDPIMKELKDK

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SDH domain of SEQ ID NO:112 YGIKIMEKAE.
SDH domain of SEQ ID NO:122 SGIKLVEKVET
SDH domain of SEQ ID NO:121 YGIKLIET-E
GI: 729968 YGIYLKEKTVA

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